

AMENDMENTS

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously presented) A method for recovering plant cells from cryopreservation comprising:

obtaining cryopreserved plant cells;

thawing the cryopreserved plant cells by heating the cells to a temperature above which the plant cells are not frozen to obtain thawed plant cells;

incubating the thawed plant cells in a medium having at least one cryoprotective agent and a stabilizer; and

removing the cryoprotective agent and recovering the thawed plant cells.

2. (**Currently amended**) The method for recovering plant cells according to claim 1, wherein the plant cells are from gymnosperm or angiosperm.

3. (Previously presented) The method for recovering plant cells according to claim 2, wherein the gymnosperm is a species of a genus selected from the group consisting of *Abies*, *Cypressus*, *Ginkgo*, *Juniperus*, *Picea*, *Pinus*, *Pseudotsuga*, *Sequoia*, *Taxus*, *Tsuga*, and *Zamia*.

4. (Previously presented) The method for recovering plant cells according to claim 3, wherein the *Taxus* species is *T. baccata*, *T. brevifolia*, *T. canadensis*, *T. chinensis*, *T. cuspidata*, *T. floridana*, *T. globosa*, *T. media*, *T. nucifera* or *T. wallichiana*.

5. (Previously presented) The method for recovering plant cells according to claim 2, wherein the angiosperm is monocotyledon or dicotyledon plant cells.

6. (Previously presented) The method for recovering plant cells according to claim 5, wherein the monocotyledon plant cells are species of a genus selected from the group consisting of *Avena*, *Cocos*, *Dioscorea*, *Hordeum*, *Musa*, *Oryza*, *Saccharum*, *Sorghum*, *Triticum*, and *Zea*.

7. (Previously presented) The method for recovering plant cells according to claim 5, wherein the dicotyledon plant cells are species of a genus selected from the group consisting of *Achyrocline*, *Atropa*, *Brassica*, *Berberis*, *Capsicum*, *Catharanthus*, *Conospermum*, *Datura*, *Daucus*, *Digitalis*, *Echinacea*, *Eschscholtzia*, *Glycine*, *Gossypium*, *Hyoscyamus*, *Legumes*, *Lupinus*, *Lycopersicum*, *Malus*, *Medicago*, *Nicotiana*, *Panax*, *Pisum*, *Rauvolfia*, *Ruta*, *Solanum*, *Sophora*, and *Trichosanthes*.

8. (Previously presented) The method for recovering plant cells according to claim 1, wherein the cryoprotective agent is removed by dilution of said medium containing the thawed plant cells, or by washing or centrifugation of the thawed plant cells.

9-21. (canceled).

22. (Previously presented) A method for recovering plant cells from cryopreservation comprising:

obtaining cryopreserved plant cells;

thawing the cryopreserved plant cells by heating the cells to a temperature above which the plant cells are not frozen to obtain thawed plant cells;

incubating the thawed plant cells in a medium having at least one ethylene inhibitor, oxygen radical scavenger, divalent cation, or cryoprotective agent; and

recovering the thawed plant cells.

23. (**Currently amended**) The method for recovering plant cells according to claim 75 22, wherein the divalent cation is calcium, magnesium, or manganese.

24. (canceled).

25. (**Currently amended**) The method for recovering plant cells according to claim 75 ~~22~~, wherein the ethylene inhibitor is an ethylene biosynthesis inhibitor or an ethylene action inhibitor.

26-60. (canceled)

61. (Previously presented) The method for recovering plant cells according to claim 1, wherein the recovered plant cells are not genetically or phenotypically altered by cryopreservation as compared to non-cryopreserved plant cells.

62. (Previously presented) The method for recovering plant cells according to claim 1, wherein the thawed plant cells are incubated in a liquid suspension and the cells are recovered in liquid media.

63. (Previously presented) The method for recovering plant cells according to claim 1, wherein the cells are pretreated with a cryoprotective agent and a stabilizer prior to cryopreservation of the plant cells.

64. (Previously presented) The method for recovering plant cells according to claim 1, wherein the cryoprotective agent is removed by dilution of said medium containing the thawed plant cells, or by washing or centrifugation of the thawed plant cells.

65. (Previously presented) The method for recovering plant cells according to claim 1 further comprising a regrowth step.

66. (Previously presented) The method for recovering plant cells according to claim 1, wherein the cryopreserved plant cells have a cryoprotective agent present in a concentration of about 0.5M to about 2M.

67. (Previously presented) The method for recovering plant cells according to claim 1, wherein the cryopreserved plant cells have a cryoprotective agent present in a concentration of about 5% to about 20% by weight.

68. (Previously presented) The method for recovering plant cells according to claim 63, wherein the cryoprotective agent is DMSO, ethylene glycol, fructose, sucrose, glucose, sorbitol, mannitol, glycerol, or a combination thereof.

69. (Previously presented) The method for recovering plant cells according to claim 1, wherein the thawing step comprises heating the cryopreserved plant cells at a rate of at least about 30°C per minute to about 60°C per minute.

70. (Previously presented) The method for recovering plant cells according to claim 1, wherein the thawing step comprises heating the cryopreserved plant cells at a rate of at least about 140°C per minute to about 200°C per minute.

71. (Previously presented) The method for recovering plant cells according to claim 25 wherein the ethylene inhibitor is a silver salt.

72. (Previously presented) The method for recovering plant cells according to claim 71, wherein the silver salt is silver thiosulfate, silver nitrate, silver chloride, silver acetate, silver phosphate, silver sulfate, silver nitrite, or combinations thereof.

73. (Previously presented) The method for recovering plant cells according to claim 25, wherein the ethylene biosynthesis inhibitor is spermidine, spermine, catechol, n-propyl gallate, hydroquinone, ferulic acid, alar, phenylethylamine, salicyl alcohol, salicylic acid, indomethacin, or combinations thereof.

74. (**Currently amended**) The method for recovering plant cells according to claim 75 ~~22~~, wherein the cryoprotective agent is sorbitol, mannose, sucrose, trehalose, proline, or combinations thereof.

75. (New) A method for recovering plant cells from cryopreservation comprising:
obtaining cryopreserved plant cells in a medium containing a first cryoprotective agent;
thawing the cryopreserved plant cells by heating the cells to a temperature above which
the plant cells are not frozen to obtain thawed plant cells;
incubating the thawed plant cells in a medium having at least one ethylene inhibitor,
oxygen radical scavenger, divalent cation, a second cryoprotective agent that is the same or
different from the first cryoprotective agent, or combinations thereof; and
removing the cryoprotective agent and recovering the thawed plant cells.